

**DETERMINATION OF ICE AGE:
A PROPOSED SCHEME FOR A RADARSAT
SEA ICE GEOPHYSICAL PROCESSOR SYSTEM**

R. Kwok, 1), A. Rothrock*, G. F. Cunningham and H. Stern*
Jet Propulsion Laboratory, 4800 Oak Grove Dr, Pasadena, CA 91109
Tel: (818) 354-5614, FAX: (818) 393-5285
* Polar Science Center, University of Washington, Seattle, WA 98105

We propose a Lagrangian ice motion tracker to follow the trajectory of ice particles at grid points in the winter Arctic. From the displacement data, we can derive the area changes associated with a grid cell which is defined by the area enclosed by straight line-segments connecting four grid points. Any new area created during the time interval between SAR observations contains new sea ice with an age uncertainty equivalent to that of the time interval. During the next time step, the age of this ice is incremented by the size of the time step. An ice age histogram is constructed from a series of motion observations. A decrease in area is accounted for by ridging the youngest ice in the histogram. A scheme for extended temporal observation of the sea ice cover is proposed. This age distribution can be converted into ice thickness with the appropriate environmental forcings. We propose that this scheme be incorporated into the sea ice geophysical processor system for RADARSAT data.